UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,896	12/02/2003	Shinichi Gayama	041514-5316	2432

55694	7590	02/24/2006

DRINKER BIDDLE & REATH (DC)
1500 K STREET, N.W.
SUITE 1100
WASHINGTON, DC 20005-1209

EXAMINER
WARREN, DAVID S

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	10/724,896	GAYAMA, SHINICHI
	Examiner	**Art Unit**
	David S. Warren	2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 December 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-10</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-10</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>02 December 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>6/7/04</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2.   Claims 1 – 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 1, 9, and 10, it appears that "partial music data pieces" start from a position of "each chord in [the] chord progression." In other words, this suggests that for each chord there is a "partial music data piece." In this scenario, a single chord could exist in several data pieces. Yet the specification seems to imply that a "data piece" consists of a series of chords wherein several chords form a piece and that no two data pieces can possess the same chord. Clarification is required. Also in claims 1, 9, and 10, the Examiner questions the meaning of "peak value." How can a similarity contain a "peak value." What measure is used to determine "peak value." The specification appears to imply a correlation, but it is not clear as to what is being measured. For the rejection that follows, the Examiner is interpreting this to be a value associated with amplitude (or intensity) at a particular frequency (as shown in Applicant's figs. 5 and 6). Or do the Applicant's peaks refer to those shown in figs. 19A – 19F? Furthermore, the wording of the claim (i.e., "the calculated similarity degree indicates a peak value ...") is interpreted that *any* similarity

degree will yield a peak value. Furthermore, the Examiner questions whether the

Applicant really intends to claim that the output device "calculates the number of times

that the calculated similarity degree indicates a peak value" – it appears from the

drawings and specification (also hard to understand) the invention appears to be

"calculating the peak" (i.e., not the number of times of peak, as shown in figs. 5, 6, and

19A – 19F). In claim 2, it is not clear as to how the "ratio of time lengths" is used. What

are the "time lengths" being used to calculate the ratio? Also in claim 2, "the attribute" is

without antecedent. A chord attribute can be virtually anything, e.g., volume, duration,

effect, quality (minor, major, diminished, etc.), function, intensity, name, inversion,

timing, etc. In claim 3, it is not clear as to how anything can "temporally jump back and

forth." This implies going back in time, which, of course, is impossible. In claim 4, it is

not clear as to how a chord can be represented by "chord progression data." It appears

that the Applicant is representing each chord by a chord progression. The reverse

would be more likely. Clarification is required. Also in claim 4, it is not clear as to how

(or why) two chords have a related key, they would be regarded as the same chord.

First, it is not clear as to what is meant by related key – typically, each major key has a

related minor key, e.g., the key of C major is related to the key of A minor. But why

would, say, B minor 7 flat 5 (in C major) be considered the same chord as F major (in

the key of A minor)? All the chords in the key of C major are also within the key of A

minor – but the Examiner does not understand why all those chords would be "regarded

as the same chord"? In claim 5, it is not clear as to how any apparatus for detecting

chord progressions can have only two candidates used to compare (there are many

thousands of possible chord progressions). It is also not understood as to what is

meant by "mutually compares." The Examiner is interpreting this as if "mutually" were

omitted from the language since it appears (from the specification) that the partial music

data is compared with the chord progression data. Regarding claim 6, it is not

understood as to what is meant by "smoothing…trains of …first and second chord

candidates repeatedly detected…" No explanation is given as to what is meant by <u>a</u>

<u>train of chord candidates</u>. Does train mean progression? Or library of possible chord

candidates? For the rejection that follows, the Examiner is interpreting "train" to mean

"progression." Also in claim 6, it is not understood as to what is meant by "representing

a level of a frequency component at predetermined time intervals." For the rejection

below, the Examiner is interpreting "frequency component" to be equivalent to pitch.

Thus, this appears to be a representation of pitch intensity over time. Clarification is

required. Regarding claim 7, it is not clear as to what is meant by "temporary chords."

The Applicant appears to be detecting a chord progression from music input to the

apparatus. The Examiner cannot determine where (or why or how) the need for

"temporary chords" is used. Are these chords, used for short duration? Furthermore,

there is no antecedent to "said predetermined number of temporary chords." Regarding

claim 8, it is not clear as to what is meant by "said output device reproduces <u>music</u>

<u>sound of a part calculated the largest number of times for each chord position</u> in said

chord progression music data to output the music sound" [Emphasis added]. This does

not appear to be proper idiomatic English. Furthermore, what is meant by "largest

number of times of each chord position"? Won't each chord have one (and only one)

position? The Examiner understands the use of polytonality, but this does not appear to

Applicant's intent. Does the Applicant mean "positions of a specific chord within a

measure"? For example, C minor appears on beat one of measure one, beat one of

measure two, beat one of measure 5, beat 3 of measure seven, and so forth. If so,

what possible use and/or value could the analysis provide? Correction and/or

clarification is required.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Larson (5,440,756) in view of Akoi et al. (5,763,802). Regarding claims 1, 9, and 10,

(as best as can be understood, see §112 supra), Larson discloses the use of an

apparatus for detecting the structure of music (i.e., chord progression), comprising a

comparator (see sentence bridging cols. 2 and 3; col. 7, lines 64 – 67; col. 70, lines 51 –

53, lines 59 – 62; col. 71, lines 36 – 40; col. 72, lines 6 – 10) which compares music

pieces with chord data, a chord position detector (the Examiner interprets "position" to

be temporal position, i.e., in time) with respect to time (see sentence bridging cols. 2

and 3; and col. 8, first paragraph) using peak values (col. 6, lines 65 – 67), and an

output device that uses the peak value and the similarity of the peak values with a chord library (see sentence bridging cols. 2 and 3). Larson does not teach the use of using a "partial music data producing device which produces partial music data pieces each including a predetermined number of consecutive chords." Akoi discloses the use of a chord analysis system wherein each chord of a *divided section* is determined (col. 10, lines 13 - 15). As best as can be determined, the "divided sections" of Akoi are synonymous (or functionally equivalent) to the "partial music data pieces" of the Applicant. It would have been obvious to one of ordinary skill in the art to combine the teachings of Larson and Akoi to obtain the chord progression detection device using partial music data pieces. The motivation for making this combination is to optimize data transfer (this is known as data chunking, which is especially useful in audio data processing). Regarding claim 2, as best as can be understood (see §112 rejection supra), Aoki discloses the use of calculating "pitch difference" (col. 10, lines 16 – 19) – the Examiner maintains that *all* pitch differences are calculated, including the root. Furthermore, Larson discloses calculation (i.e., determining) the time lengths of each chord (both after and prior to a chord change) – see col. 2, lines 11 – 15. Regarding claim 3, as best as can be understood (see §112 rejection supra), as discussed supra, both Larson and Akoi disclose the use of comparators (no comparator, or any device can jump back and forth temporally). Regarding claim 4, as best as can be understood (see §112 rejection supra), any chord in one key will also exist in a related key. As stated supra, two keys are related if they have the same key signature (i.e., Bb major and G minor have the same key signature) they also have the same chords. Any chord

in Bb major will also be in the key of G minor – thus they are regarded as the same.

Regarding claim 5, as best as can be understood (see §112 rejection supra), both

Larson and Akoi disclose comparing music data with pre-existing data (e.g., Larson's

library). The music piece data is deemed to be the music inputted and the chord data is

the data in the library. Regarding claim 6, as best as can be understood (see §112

rejection supra), as stated supra, the "frequency converter" is deemed to be merely a

way of representing pitch intensity over time (see discussion supra) – see Larson's fig.

10E. The audio conversion system of Larson is equivalent to Applicant's frequency

converter, component extractor (components are the pitches), and a chord candidate

detector (see Abstract). The smoothing device of claim 6, appears to "produce a chord

progression music data." Since this is the entire purpose of both Larson and Akoi, the

Examiner maintains that this function is inherent in both Larson and Akoi (as stated

supra, this is difficult to understand). Regarding claim 7, as best as can be understood

(see §112 rejection supra), without providing a definition of "temporary chord", the

Examiner maintains that any chord can be deemed "temporary" since it has a finite

duration. Regarding claim 8, as best as can be understood (see §112 rejection supra),

it is difficult to understand which "part" is being calculated, but Larson shows several

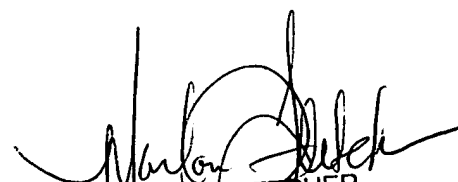calculations (of various "parts") see col. 6, paragraph 5.

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. The patent to Fujishima (6,057,502) anticipates Applicant's

invention.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to David S. Warren whose telephone number is 571-272-

2076. The examiner can normally be reached on M-F, 9:30 A.M. to 6:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Paula Bradley can be reached on 571-272-2001 ext 33. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

dsw

MARLON T. FLETCHER
PRIMARY EXAMINER